

Improvement in urinary retention due to recurrent anastomotic prostate cancer treated with various therapies by intra-arterial infusion of cisplatin and ifosfamide

Keiichi Uemura · Kiyoaki Nishihara ·
Tokumasa Hayashi · Katsuro Tomiyasu ·
Kei Matsuoka

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Abstract Although many treatments have been applied to treat hormone-refractory prostate cancer (HRPC), therapeutic outcome is not altogether satisfactory. In the case of locally recurring HRPC, uncontrolled gross hematuria, dysuria, and scalding are often experienced. We report a patient who improved following intra-arterial infusion of cisplatin (CDDP) and ifosfamide (IFM) to treat urinary retention caused by locally recurring HRPC. After chemotherapy, cancer volume was remarkably reduced and symptoms improved.

Keywords Hormone-refractory prostate cancer · Intra-arterial infusion chemotherapy · Urinary retention

Introduction

It is well known that most prostatic carcinomas are androgen dependent. Therefore, androgen deprivation therapy (ADT) is one of most effective systemic palliative treatments for such carcinomas. Although ADT is initially extremely effective, serum prostate-specific antigen (PSA) levels increase over time, and the disease eventually becomes characteristic of hormone-refractory prostate cancer (HRPC). Several types of treatment have been applied to treat HRPC, including antiandrogen alternation [1], supplemental steroid therapy [2], and generalized chemotherapy with docetaxel hydrate (DTX) [3, 4]. However, these therapeutic modalities have only a short-term

effect. In addition, HRPC is occasionally encountered with locally recurring carcinoma and uncontrolled gross hematuria, dysuria, and scalding. These symptoms adversely affect the quality of life of HRPC patients. We report a patient with HRPC with locally recurring HRPC accompanied by urinary retention. Treatment with intra-arterial infusion chemotherapy using cisplatin (CDDP) and ifosfamide (IFM) removed the symptom for a considerable period.

Case reports

A 64-year-old Japanese man was admitted to hospital with lower urinary tract symptom (LUTS) and a high PSA level (180 ng/ml) in April 1997. He was diagnosed with prostate cancer (moderately differentiated adenocarcinoma, T3bN1M0, stage D1) and was started on combined androgen blockade (CAB) with leuporelin acetate (11.25 mg/3 months) and flutamide (375 mg/day). Two months later, flutamide was discontinued because of liver damage, and treatment was switched to estramustine phosphate (EMP) sodium (626.8 mg/day). Six months after starting hormonal therapy, metastatic lymph node lesion and seminal vessel invasion was no longer visible on computed tomography (CT). Therefore, we performed radical prostatectomy (moderately differentiated adenocarcinoma, Gleason score 4 + 3 = 7, ly⁺, v⁺, pn⁺, sv⁻, pw⁻, dw⁻, cap⁺, n⁺) and obturator lymph node excision to completely remove the cancerous lesion. The patient received adjuvant radiation therapy (60 Gy) to the pelvic cavity postoperatively because pathological findings showed the prostatic carcinoma had extended beyond the prostate capsule. Additionally, a course of chemotherapy with cyclophosphamide (CPM), doxorubicin hydrochloride (ADM), and CDDP

K. Uemura (✉) · K. Nishihara · T. Hayashi · K. Tomiyasu ·
K. Matsuoka
Department of Urology, Kurume University School of Medicine,
Asahimach 67, Kurume, Fukuoka, Japan
e-mail: uemura_keiichirou@kurume-u.ac.jp



Fig. 1 Magnetic resonance imaging (MRI) shows anastomotic recurrence after radical prostatectomy and radiation therapy



Fig. 2 Magnetic resonance imaging (MRI) shows disappearance of the anastomotic tumor after intra-arterial infusion chemotherapy

(CPM 500 mg, ADM 50 mg, CDDP 100 mg) was performed. Thereafter, the patient was followed up with hormonal therapy consisting of leuporelin acetate (11.25 mg/3 months) and EMP (626.8 mg/day). In June 2002, PSA value decrease 1.35 ng/ml. However, PSA value continued to increase (13.74 ng/ml) in December 2004; magnetic resonance imaging (MRI, Fig. 1) and transrectal ultrasonography (TRUS) revealed abnormal findings in the anastomotic area. Transrectal biopsy was performed, and we diagnosed a recurrence of prostatic carcinoma (moderately differentiated adenocarcinoma, Gleason score, $4 + 4 = 8$). The patient complained of dysuria that eventually progressed to urinary retention. Whole-body CT and bone scintigraphy showed no abnormal findings. As a result, the final diagnosis was HRPc with local recurrence.

We then decided to attempt intra-arterial infusion chemotherapy to treat the local recurrence. An indwelling catheter was placed in the bilateral internal iliac artery, and the pump was placed in a subcutaneous pocket in February 2005. The combination chemotherapy consisted of CDDP (20 mg/m^2) (days 1–5) and IFM (1.2 mg/m^2) (days 1–3), and its regimen cycle was every 21 days. The patient received two courses of chemotherapy, after which his PSA value decreased to 1.94 ng/ml, the tumor showed a remarkable reduction in size (Fig. 2), and the symptom improved. In this case, grade 3 neutropenia (which was improved by granulocyte-colony stimulating factor), vomiting, general fatigue, and grade 3 alopecia were observed. However, other serious side effects that could pose a risk to continued intra-arterial infusion chemotherapy were not

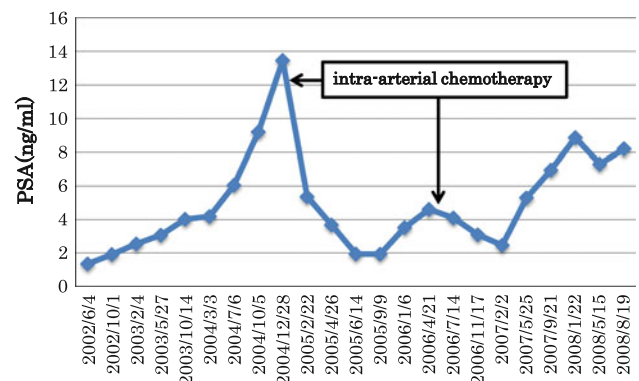


Fig. 3 Progress of PSA treatment and transition values

observed. Therefore, we were able to continue chemotherapy according to schedule. However, PSA value gradually increased to 4.61 ng/ml in April 2006. We once again attempted intra-arterial infusion chemotherapy of CDDP and IFM with the same dose as previously used (Fig. 3). At a later time, the PSA value once again rose from the value in May 2007. However, the patient had no symptoms of LUTS for 45 months after the first chemotherapy treatment.

Discussion

Treating HRPc is troublesome for a urologist because the standard treatment has not yet been established.

The prognosis of patients with HRPC is commonly thought to be unfavorable [1]. In addition, HRPC patients occasionally have LUTS, such as urinary retention and dysuria accompanied with gross hematuria, which adversely affects quality of life. Here, we reported a case of urinary retention due to locally recurrent HRPC in which retention was improved by intra-arterial infusion of CDDP and IFM. According to the established criteria for evaluating outcomes of nonsurgical therapy for prostate cancer, the prostatic lesions of the case showed a partial response (PR). However, on the basis of PSA responses, the patient showed complete response (CR).

At present, HRPC treatments, such as antiandrogen alteration, systemic chemotherapy with DTX [3, 4], and low-dose steroids [2], are effective in the short term, but their effectiveness decreases over time. Various generalized combination chemotherapies have been tried for HRPC, but no reports of their long-term efficacy are available [5–10]. In the 1990s, intra-arterial chemotherapies for HRPC were reported, which indicated that, whereas they were effective for local carcinostatics, they were not effective as a generalized treatment modality [11–13]. In the study reported here, because we encountered locally recurring HRPC with LUTS, we thought it may be worthwhile to try intra-arterial chemotherapy for relieving LUTS caused by HRPC. Our cases suggest that intra-arterial chemotherapy may be a good choice for treating HRPC with locally recurring HRPC only. However, the problem with this therapy is that it does not radically treat the cancer. In addition, it should not be administered in cases with poor performance status or prognosis. DTX could be used as a second-line intra-arterial chemotherapy treatment after CDDP and IFM, because intra-arterial DTX accompanied with CDDP for oropharyngeal cancer is reported to result in an excellent primary response rate and acceptable acute toxicity [14].

In conclusion, intra-arterial chemotherapy with CDDP and IFM can alleviate LUTS caused by locally recurrent HRPC. Furthermore, this therapy could maintain patients' quality of life for relatively long periods. Accordingly, this regimen should be seen as a treatment option for locally recurrent HRPC. As the number of prostate cancer cases increases, urologists are likely to encounter more patients who are suitable for such treatment.

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